X42 Drinking water treatment residuals.

HYDROKINETICS INC.

12975 W. 24th Pl.
Golden, (Applewood) Colorado, 80401
(303) 237-8865
Fax 237-8869

CO1 2143 - 08425

May 19, 2009

Ms. Valois Shea
United States Environmental Protection Agency
Mail Code: 8P-W-GW
1596 Wynkoop Street
Denver, CO 80202-1129

Dear Ms. Shea:

Please find attached two copies of the application for an Area Class I injection well permit for the East Cherry Creek Valley Water and Sanitation District. The application includes the signed permit application itself and attachments A through U as required. If you have any questions, please call.

Sincerely,

Pat OBrien

Patrick OBrien
Professional Engineer
Certified Professional Geological Scientist

OMB No. 2040-0042 Approval Expires 1/31/05

United States Environmental Protection Agency

Underground Injection Control Permit Application

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number		T/A	C
U	CO12143-08425 -08426 -08427		

Read Attached Instructions Before Starting

For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address

Owner Name: EAST CHERRY CREEK VALLEY W&S

Street Address: 6201 S. GUN CLUB ROAD

Phone Number: 3036933800

City: AURORA

State: CO

ZIP CODE: 80016

III. Operator Name and Address

Owner Name: SAME

Street Address:

Phone Number:

City:

State:

ZIP CODE:

IV. Commercial Facility

- [ ] Yes
- [X] No

V. Ownership

- [X] Private
- [ ] Federal
- [ ] Other

VI. Legal Contact

- [X] Owner
- [ ] Operator

VII. SIC Codes

4941

VIII. Well Status *(Mark "x")*

- [ ] A. Operating — Date Started mo day year:
- [ ] B. Modification/Conversion
- [X] C. Proposed

IX. Type of Permit Requested *(Mark "x" and specify if required)*

- [ ] A. Individual
- [X] B. Area

Number of Existing Wells	Number of Proposed Wells	Name(s) of field(s) or project(s)
0	3	ECCV RO

X. Class and Type of Well *(see reverse)*

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
1	M		3 Type M wells

XI. Location of Well(s) or Approximate Center of Field or Project

Latitude Deg	Min	Sec	Longitude Deg	Min	Sec	Township and Range Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line
39	59	17	104	43	26	1	1S	66W	SW	3600	N	2550	W

XII. Indian Lands (Mark 'x')

- [ ] Yes
- [X] No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A--U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title *(Type or Print)*	B. Phone No. *(Area Code and No.)*
Kipp Scott Utilities Manager	303-693-3800 x226
C. Signature: Kipp Scott	D. Date Signed: 5/14/09

EPA Form 7520-6 (Rev. 8-01)

EAST CHERRY CREEK VALLEY WATER AND SANITATION DISTRICT APPLICATION FOR CLASS 1 AREA INJECTION WELL PERMIT.

Prepared for East Cherry Creek Valley Water and Sanitation District

Prepared by: Hydrokinetics, Inc. and

Peterson Energy Management, Inc.

May 19, 2009

EAST CHERRY CREEK VALLEY WATER AND SANITATION DISTRICT APPLICATION FOR CLASS 1 AREA INJECTION WELL PERMIT.

Table of Contents

Attachment A. Area of Review

The East Cherry Creek Valley Water and Sanitation District currently operates a drinking water wellfield approximately one mile south of Lochbuie, Colorado in Adams County. The wellfield currently consists of 12 alluvial wells from 72 to 89 feet in depth. Within one to two years, water from this wellfield will be treated using a reverse osmosis (RO) procedure at a water treatment plant in section 1, T1S, R66W. Concentrate remaining after RO treatment is complete will require disposal. It is the District's intent to dispose of this reject water, at rates from 150 to 400 gpm per well, in one to three deep disposal wells on site. These Class 1 wells will be located at the sites shown on the attached map. ECCV will construct well DI-1 first, and based on its performance, will construct wells DI-2 and DI-3 at a later date if they are needed.

Wells DI-1 and DI-2 will be located in section 1, T1S, 66W while well DI-3 will be located in either section 11 or 12, T1S, R66W. The locations of these well sites are approximate and may be moved slightly for logistical purposes. The DI-3 Alt. site shown on the map is the alternate site to DI-3. The most cost effective site of the two will be chosen if this well is ultimately required.

The area of review (AOR) includes the ECCV site shown on the attached map and the area within one quarter mile of said site boundaries.

Attachment B. Maps of Well/Area and Area of Review

The attached topographic map entitled "Wells in Area of Review" shows the ECCV site and the three injection well sites. In general (per the attached schematic), the concentrate will flow from the water treatment plant, through a low-pressure brine line, to storage tanks at the plant site, through a low-pressure line to a storage tank at the wellhead, through a high-pressure pump and into the well. High-pressure pumps will be constructed at each wellhead to pump the concentrate into each well. Therefore, the high-pressure zones will be confined to the wellhead and the wellbore.

There will be no hazardous waste treatment, storage, or disposal facilities on the ECCV project site.

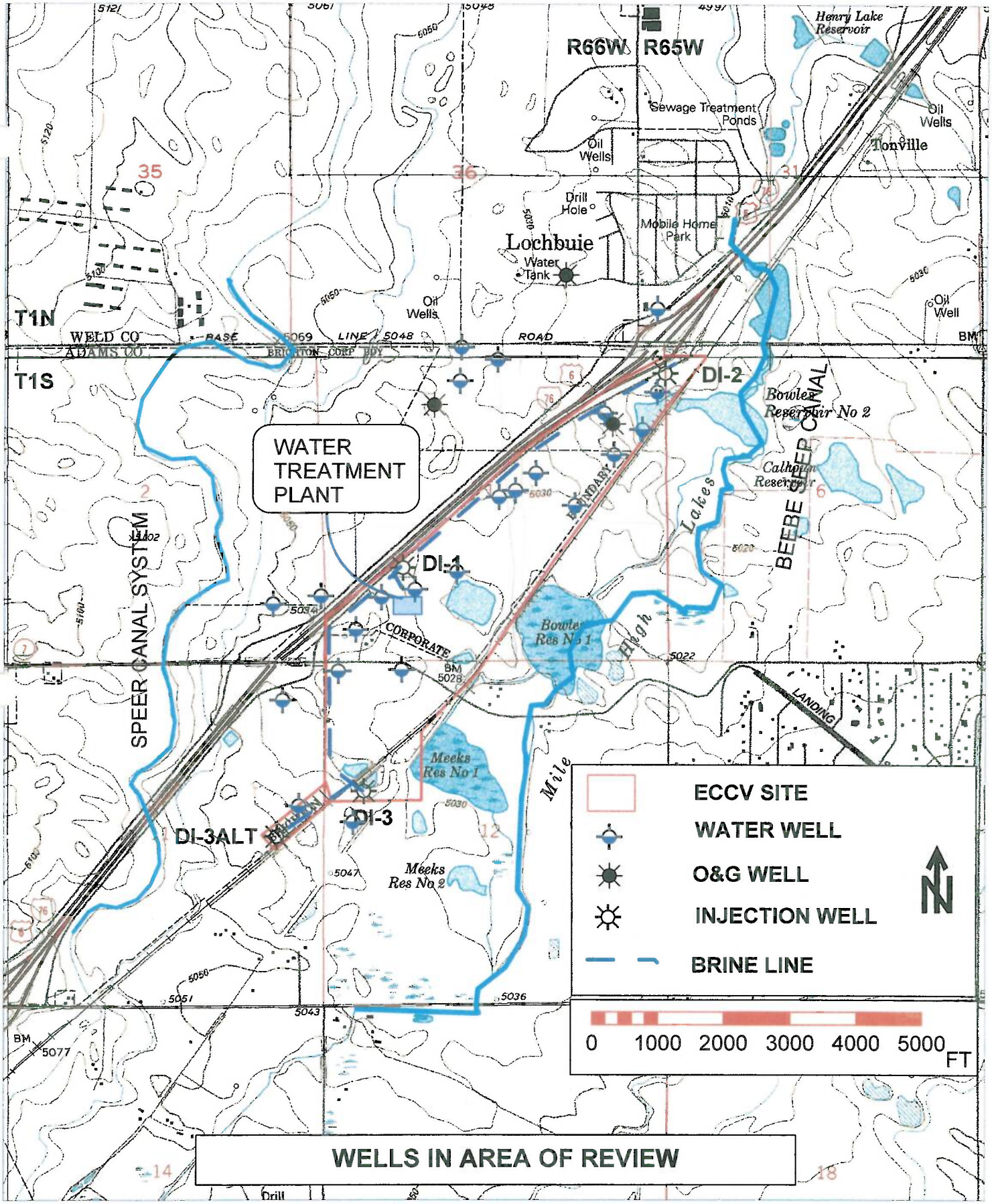
Also shown on the map are all oil/gas wells found in the AOR in the Colorado Oil and Gas Conservation Commission's records as of January 23, 2009. All three oil/gas wells located in the AOR are perforated in the J Sand, well above ECCV's intended injection zone. Two are producing and on is plugged and abandoned (see attached table).

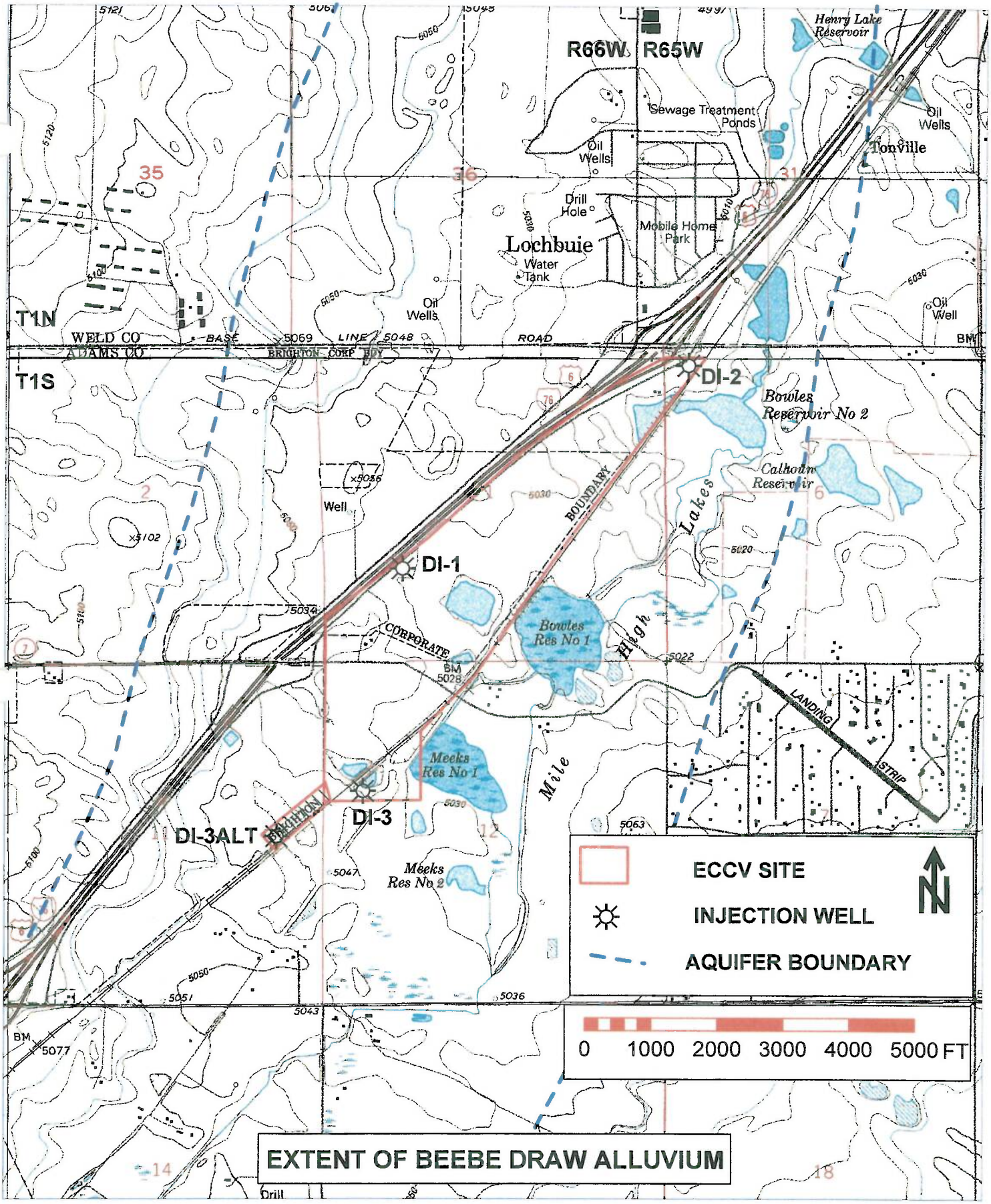
All permitted water wells within the AOR, as listed in the Colorado Division of Water Resources database, are also shown on the attached map. There are 25 irrigation, municipal, domestic and/or stock wells in the AOR. Twelve of these wells (see attached table) are ECCV municipal-use alluvial wells.

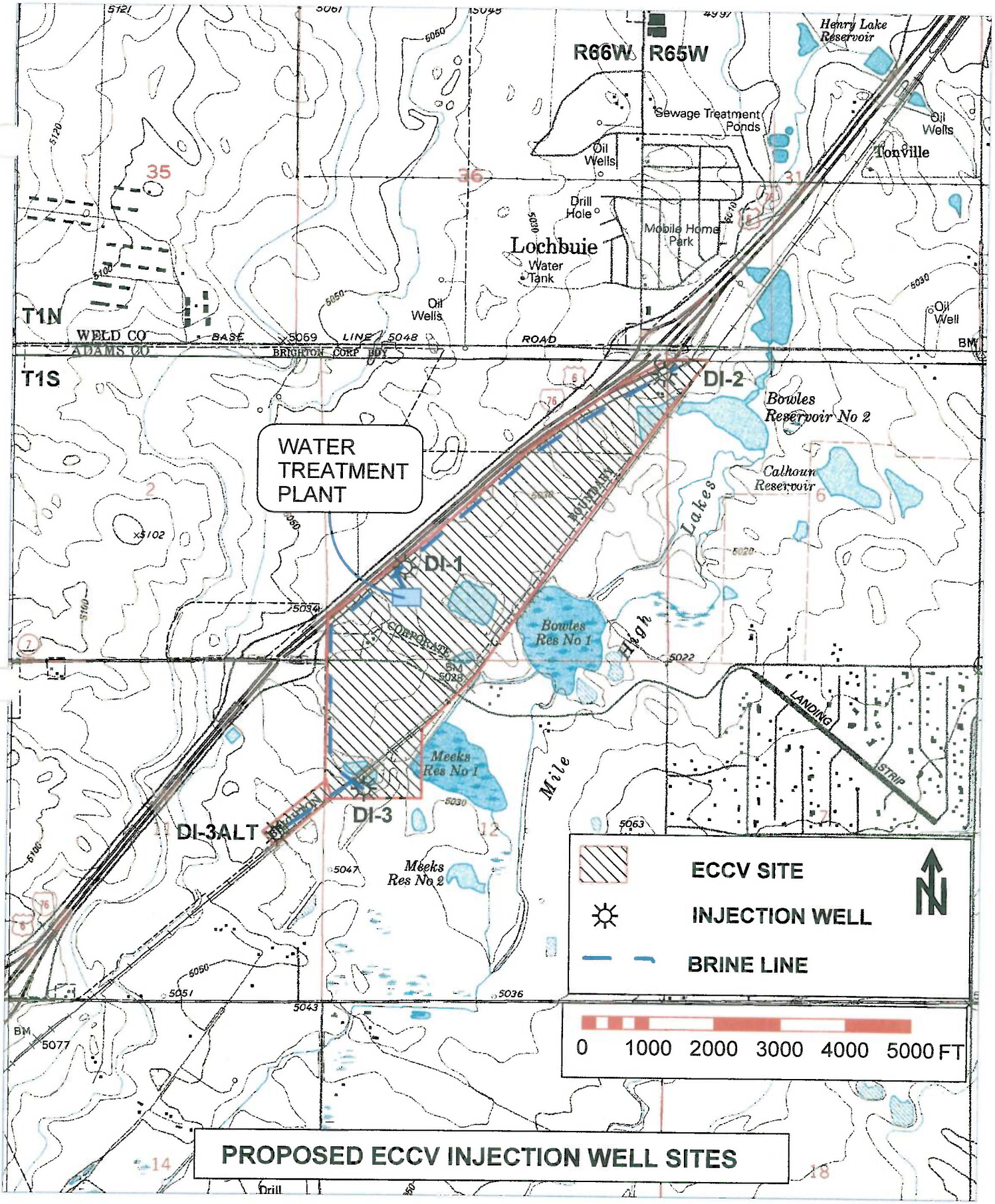
The deepest of the listed water wells is completed in the Laramie-Fox Hills aquifer. The depth is not listed in the record database, but is likely less than 1200 feet deep. The remaining wells are completed in the Quaternary alluvium at depths ranging from 35 to 89 feet.

All the water wells in the AOR are hydraulically separated from the intended injection zone (9300 to 10,400 feet deep) by approximately 6000 feet of low-permeability Pierre Shale.

There are several small ponds in the AOR (attached map). They include the Meeks Reservoirs 1 and 2 and the Bowles Reservoirs 1 and 2, shown in blue. The small shallow pond located immediately west of Bowles Reservoir 1 is no longer present. There are also two ditches, the Speer and Beebe Seep (see map) near the ECCV site. There are two residences in the AOR. One is located in the SE 1/4, SE 1/4, of section 1 and the other is located in the NW 1/4, NW 1/4 of section 12. Based on a review of available mapping and numerous site inspections, there are no springs, mines, quarries, injection wells, or faults in the AOR.


R66W
R65W
Henry Lake Reservoir
Sewage Treatment Ponds
Oil Wells
Tonville
Drill Hole
Mobile Home Park
Lochbuie
Water Tank
T1N
WELD CO
ADAMS CO
BASE LINE
ROAD
T1S
WATER TREATMENT PLANT
DI-1
DI-2
DI-3
DI-3ALT
SPEER CANAL SYSTEM
BEEBE DRAW CANAL
Bowles Reservoir No 2
Calhoun Reservoir
Bowles Res No 1
Meeks Res No 1
Meeks Res No 2
CORPORATE BOUNDARY
High Lakes
Mile
LANDING
ECCV SITE
WATER WELL
O&G WELL
INJECTION WELL
BRINE LINE
N
0 1000 2000 3000 4000 5000 FT
WELLS IN AREA OF REVIEW


R66W
R65W
Henry Lake Reservoir
Sewage Treatment Ponds
Oil Wells
Tonville
35
36
31
Drill Hole
Mobile Home Park
Lochbuie
Water Tank
T1N
WELD CO
ADAMS CO
BASE LINE
BRIGHTON CORP BDY
ROAD
Oil Well
T1S
DI-2
Bowles Reservoir No 2
Calhoun Reservoir
Well
BOUNDARY
Lakes
DI-1
Bowles Res No 1
High
CORPORATE
LANDING
STRIP
Meeks Res No 1
Mile
DI-3
DI-3ALT
BRIGHTON
Meeks Res No 2
ECCV SITE
INJECTION WELL
AQUIFER BOUNDARY
N
0 1000 2000 3000 4000 5000 FT
EXTENT OF BEEBE DRAW ALLUVIUM


R66W
R65W
Henry Lake Reservoir
Sewage Treatment Ponds
Oil Wells
Tonville
Drill Hole
Lochbuie
Water Tank
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T1N
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T1S
DI-2
Bowles Reservoir No 2
Calhoun Reservoir
WATER TREATMENT PLANT
DI-1
Bowles Res No 1
Meeks Res No 1
DI-3
DI-3ALT
Meeks Res No 2
Mile High Lakes
LANDING STRIP
ECCV SITE
INJECTION WELL
BRINE LINE
N
0 1000 2000 3000 4000 5000 FT
PROPOSED ECCV INJECTION WELL SITES

Permitted Oil and Gas Wells within Area of Review.

Permit No.	Well Type	Location and Coordinates	Depth (ft.)	Zone Perforated	Status
19800674	OG	SE, SE, 36, 1N, 66W, 990S, 990E	8040	J Sand	PA
19940601	OG	SE, NW, 1, 1S, 66W, 1467N, 1603W	8140	J Sand	PR
19940328	OG	NE, NE, 1, 1S, 66W, 1190N, 990E	8248	J Sand	PR

Listings are based on a review of Oil and Gas Commission records on 2-1-9

Well Type: O (oil), G (gas)

Status Codes: PA (plugged and abandoned), PR (producing)

Permitted Water Wells within Area of Review.

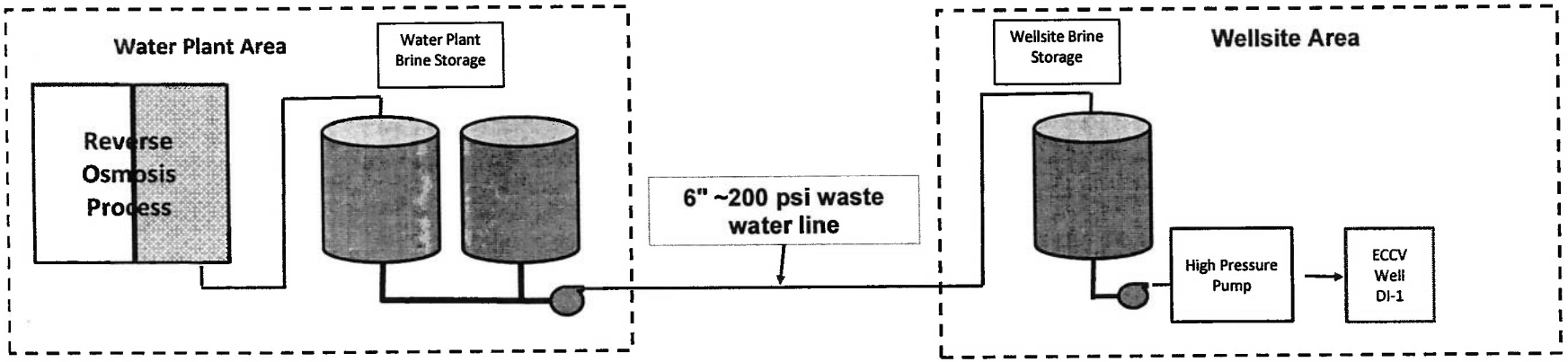
Permit No.	Location and Coordinates	Depth (ft.)	Zone Perforated	Use
9381-F	SW, SW, 31, 1N, 65W, NL	61	Alluvium	Irrigation
109683	NW, NW, 12, 1S, 66W, 100N, 75W	NL	NL	Domestic
64476-F*	NW, NW, 12, 1S, 66W, 74N, 1237W	89	Alluvium	Municipal
2564-F	SW, NW, 12, 1S, 66W, NL	71	Alluvium	Irrigation
64473-F*	SW, NW, 12, 1S, 66W, 1605N, 118W	74	Alluvium	Municipal
64475-F*	SW, NW, 12, 1S, 66W, 2625N, 487W	80	Alluvium	Municipal
15978A	NE, NE, 11, 1S, 66W, NL	NL	KLF	Domestic
64474-F*	SE, NE, 11, 1S, 66W, 2485N, 572E	72	Alluvium	Municipal
22232	SE, SE, 2, 1S, 66W, NL	58	Alluvium	Domestic
419RR	SE, SE, 2, 1S, 66W, 890S, 5E	63	Alluvium	Irrigation
272WCB	SW, SW, 1, 1S, 66W, NL	74	Alluvium	Irrigation
64477-F*	SW, SW, 1, 1S, 66W, 1075S, 825W	78	Alluvium	Municipal
64478-F*	SE, SW, 1, 1S, 66W, 940S, 1420W	77	Alluvium	Municipal
127811A	NE, NE, 1, 1S, 66W, NL	NL	NL	Stock
185806	NW, NE, 1, 1S, 66W, 250N, 2641W	68	Alluvium	Domestic
23958F	SW, NE, 1, 1S, 66W, 2827S, 2746W	NL	Alluvium	Irrigation
8061	NE, NW, 1, 1S, 66W, NL	35	Alluvium	Domestic
277588*	NE, NE, 1, 1S, 66W, 1229N, 318E	79	Alluvium	Municipal
277587*	SW, NE, 1, 1S, 66W, 2053N, 2016E	78	Alluvium	Municipal
277591*	NW, SE, 1, 1S, 66W, 2341S, 1441W	88	Alluvium	Municipal
277592*	NE, SW, 1, 1S, 66W, 1442S, 1944W	70	Alluvium	Municipal
277589*	SE, NE, 1, 1S, 66W, 1823N, 848E	75	Alluvium	Municipal
277593*	NE, NE, 1, 1S, 66W, 1072N, 976E	77	Alluvium	Municipal
14772-R	NE, NW, 1, 1S, 66W, 45N, 2045W	70	Alluvium	Irrigation
20095-R	NW, SW, 1, 1S, 66W, NL	66	Alluvium	Irrigation

Listings are based on a review of State Engineer's Office records on 1-23-9.

* Owned and/or controlled by ECCV.

NL (not listed), KLF (Laramie-Fox Hills).

ECCV Reverse Osmosis
Surface Equipment Schematic



Attachment C. Corrective Action Plan and Well Data

As there are no wells in the AOR that penetrate the proposed injection zone, this section does not require completion.

Attachment D. Maps and Cross Sections of USDWs

There are three aquifers capable of supplying drinking water to wells in the AOR. In descending order they are, alluvium, Arapahoe and Laramie-Fox Hills. All deeper formations contain water of poor quality and are not used as drinking water sources.

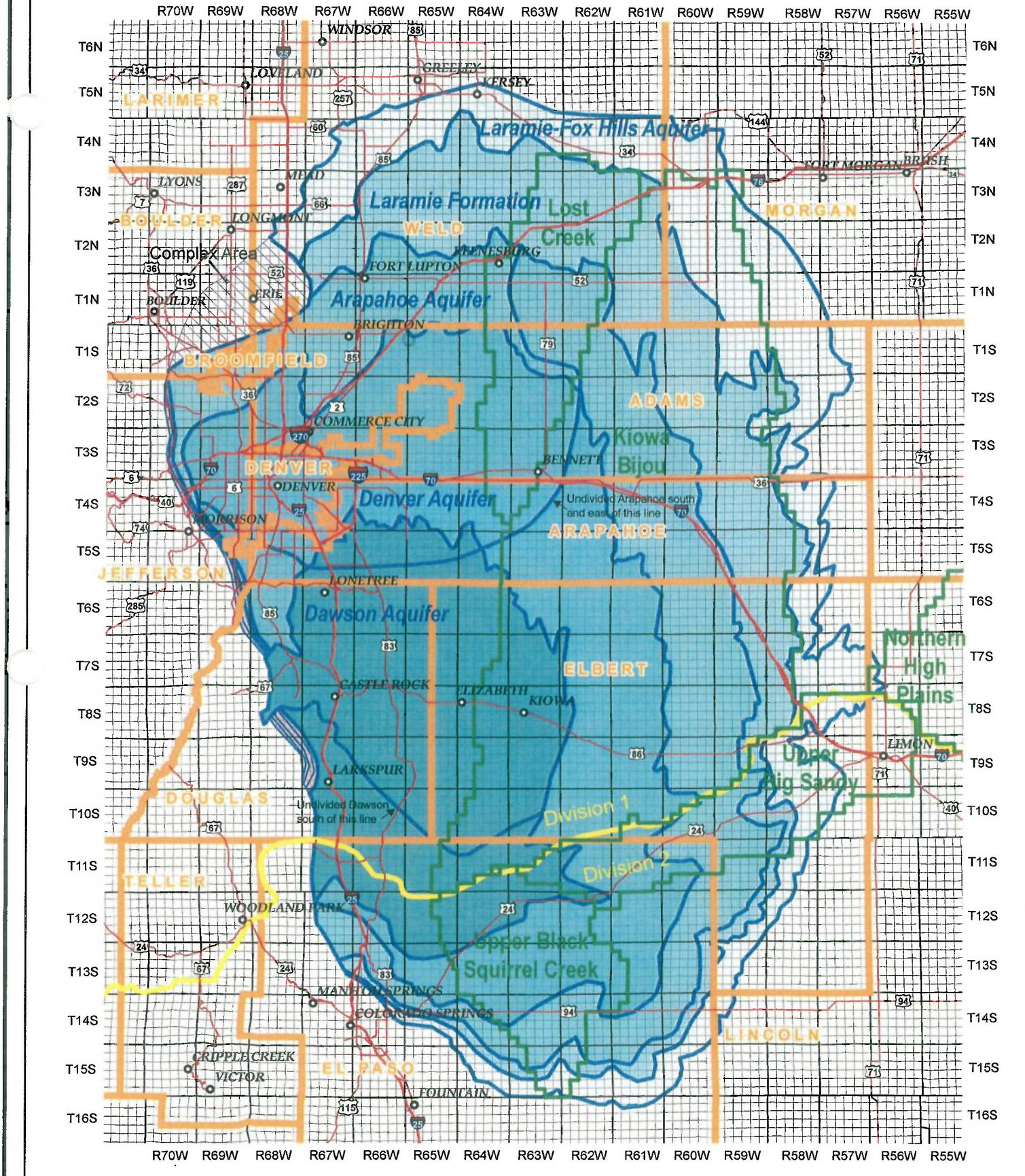
The Quaternary alluvium is a located in a paleochannel of the South Platter River. This paleochannel extends from Barr Lake northerly to the current channel of the South Platte. The channel is about two miles wide and from 10 to 80 feet in depth (see map). It supplies water for irrigation, municipal, domestic, and stock uses in the AOR. The ground water in this aquifer flows northward (USGS Hydrologic Investigations Atlas HA-736, 1996).

Below the alluvium are the Arapahoe and Laramie Fox Hills aquifers which are separated by the Laramie Formation (USGS Hydrologic Investigations Atlas HA-647 and 650, 1981). The upper two Denver Basin aquifers, the Dawson and Denver, have been eroded away in the AOR. The Laramie Fox Hills aquifer is actually a combination of the lowermost sandy zone in the Laramie Formation and the Fox Hills Sandstone. The Arapahoe and Laramie Fox Hills aquifers are the lowermost aquifers in the Denver Basin ground water system. The vertical and lateral extent of the Arapahoe and Laramie Fox Hills aquifers are shown on the attached maps and cross sections. At the ECCV site, the depth to the base of the Arapahoe and Laramie Fox Hills aquifers are 564 and 1191 feet, respectively. Immediately below the Laramie Fox Hills aquifer is 6000 feet of very low-permeability Pierre Shale which prevents vertical flow between the USDWs and the injection zone.

The injection zone will likely lie between about 9307 and 10381 feet below ground level. The actual depths of the injection zone will ultimately be determined by a review of the porosity and permeability of the materials encountered.

Because of the Pierre Shale barrier, it is extremely unlikely that fluid pumped into the injection zone will affect any USDWs.

THE_DENVER_BASIN_AQUIFER_SMALL.PRN C:\GIS\Denver_Basin_Aquifer_Map\Denver_Basin_Aquifer_8x11.mxd 6/20/05 AC



Source:
Denver Basin Aquifer, Designated Basins, and Divisions, Colorado Division of Water Resources
Counties, Colorado Department of Local Affairs
Highways, Colorado Department of Transportation

Projection: Universal Transverse Mercator, Zone 13, North American Datum 1983, Meters

STATE OF COLORADO

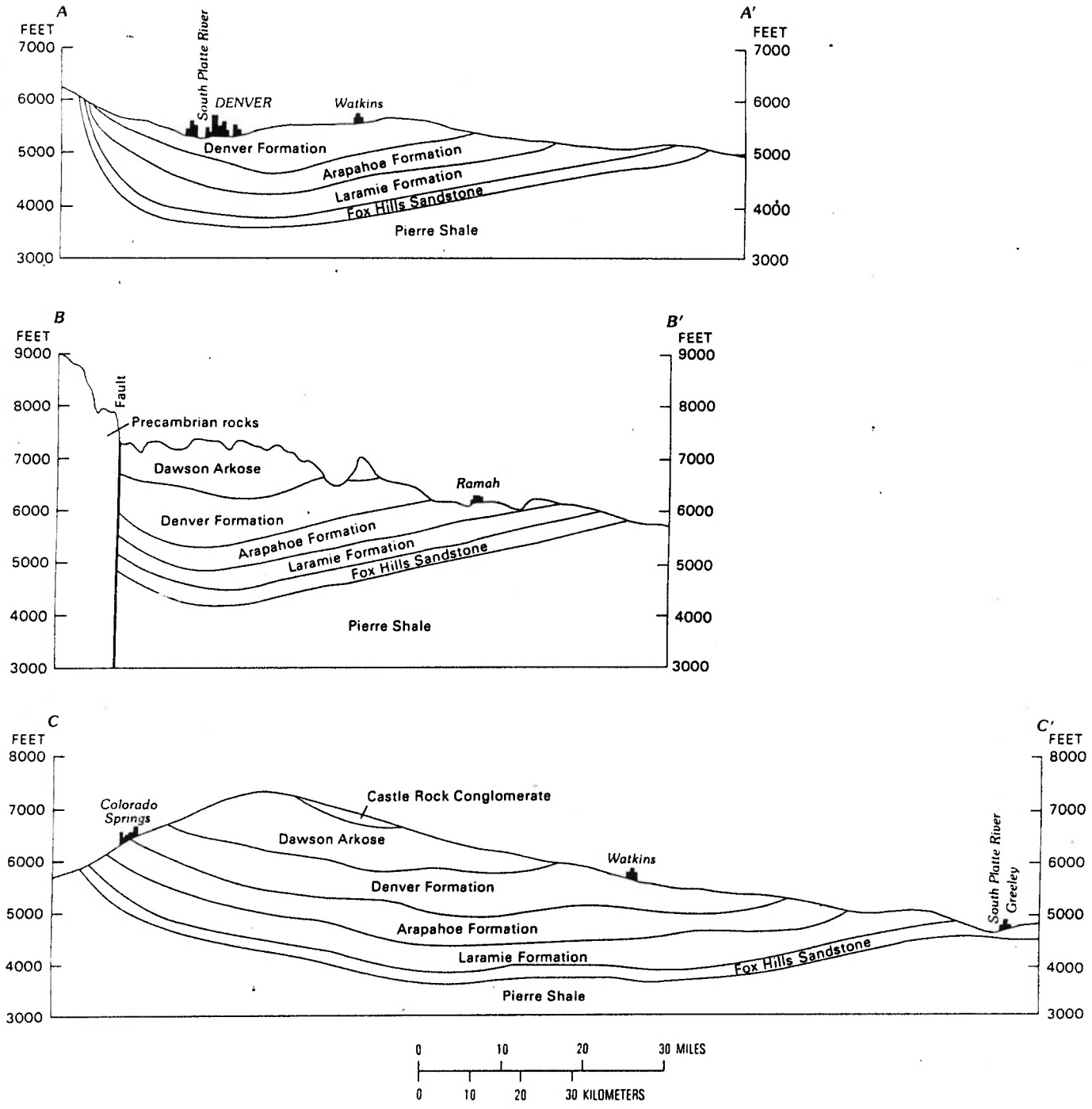
Division of Water Resources
State of Colorado

DENVER BASIN AQUIFER

0 4 8 12 16 Miles

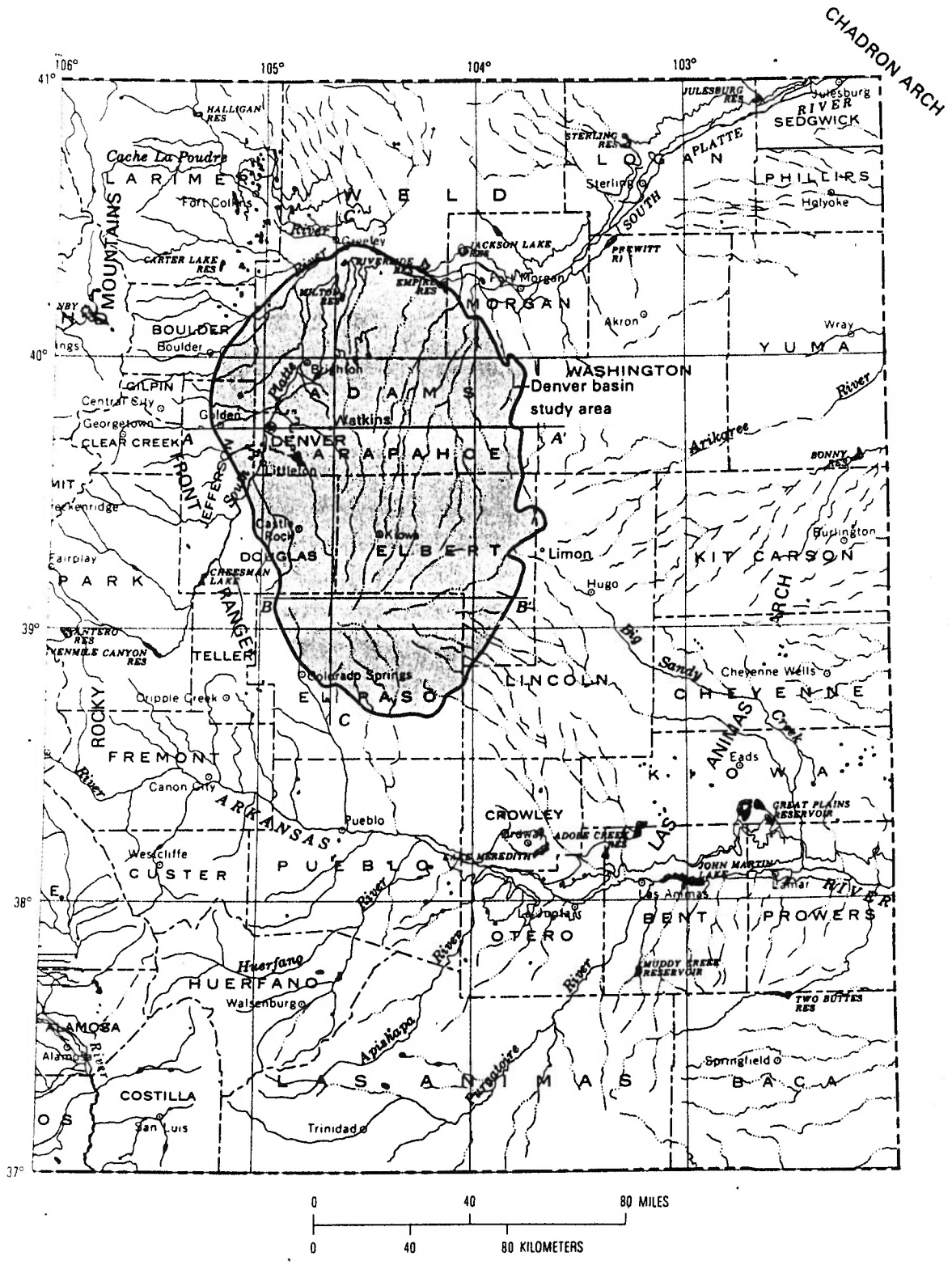
Legend

- Division
- Designated Basin
- County
- Township
- Section
- Laramie-Fox Hills Aquifer
- Laramie Formation
- Arapahoe Aquifer
- Denver Aquifer
- Dawson Aquifer
- Fault



Cross Sections–Denver Basin Aquifers

From USGS Professional Paper 1257, 1987



Denver Basin (with cross section locations)

From USGS Professional Paper 1257, 1987

Attachment E. Not Applicable.

Attachment F. Maps and Cross Sections of Geologic Structure of Area

This section deals with the lithology and geologic structure of the USDWs, confining zones and targeted injection zones. The USDWs include the alluvium, Arapahoe and Laramie Fox Hills aquifers. The main confining zones separating the USDWs from the injection zone are the Pierre Shale and the Lykins Formation (immediately above the uppermost injection zone—the Lyons Formation). The target injection zones include: Lyons, Wolfcamp, Amazon, Council Grove, Admire, Virgil and Missourian Formations.

Some or all of these formations will be used as injection zones depending on their porosity and permeability. Perforated zones will be selected after log interpretation.

REGIONAL GEOLOGY

The lithologic nomenclature of these deeper formations in a regional sense is very confusing because the names of certain deep geologic formations vary with location and time. For instance, the two regional cross sections prepared by the RMAG in 1976 (Special Publication 2,1976, map pocket) show penetration, in some wells, to the Precambrian bedrock, but do not list some of the injection zones listed above. This is because the injection zones (as described in 2009) are all lumped into the Permian and Pennsylvanian Wolfcamp and Fountain Formations as they were described in 1976 in the area of interest. Note that the regional cross sections are plotted with the top of the Graneros Formation as the datum. The well depths are shown in the geologic columns.

The two regional cross sections show the geologic section from ground level to, in some cases, Precambrian bedrock. The cross sections also show that the confining beds (Pierre Shale and Lykins Formation) contain significant, relatively impermeable shale layers.

One well shown in the regional cross sections, the Rocky Mountain Arsenal injection well (US Army Engr. Rocky Mountain Arsenal No. 1) is of particular interest as it was the apparent cause of a series of earthquakes in the 1960's. This well injected fluid into a fault zone in the Precambrian bedrock. The ECCV wells will be injecting into zones that will be at least 1000 feet above the Precambrian basement rock. Because of this vertical separation, we do not anticipate bedrock faulting to be an issue with the ECCV wells.

LOCAL GEOLOGY

Based on a review of numerous OGCC wells and the regional cross sections, we have compiled the following stratigraphic section of the local geologic units in the AOR. As instructed, we have focused on the USDWs, confining zones and targeted injection zones.

Stratigraphic Sequence

Formation	Lithologic Description (Source)	Comment
Alluvium	Stream-deposited layers of clay, silt, sand and gravel	Quaternary
Arapahoe	Interbedded layers of conglomerate, sandstone, siltstone, and shale (Stan Robson, et al, USGS, 1981)	Cretaceous
Laramie-Fox Hills	Fine to very fine grained sandstone and siltstone interbedded with shale and occasional coal layers (Stan Robson, et al, USGS, 1981)	Cretaceous, **Closest USDW**
Pierre Shale	Black to dark gray shale (RMA Well Final Report, 1961)	Cretaceous, **Low permeability Non-faulted Confining Zone**
Lykins	Red shale and siltstone with interbedded persistent units of dolomite and anhydrite. (RMAG Special Pub 2, 1976) The Harriman shale comprises the bottom portion of the Lykins and is composed of interbedded anhydrite, dolomite and red silty shale. (Suckla Farms SOB 2002)	Permian, **Low Permeability Non-faulted Confining Zone**
Lyons	Fine-grained orange to tan or light gray sandstone, becoming locally anhydritic and locally dolomitic eastward (RMAG Special Pub 2, 1976) Massive crossbedded sandstone with fine to coarse grains.... The top of the Lyons is composed of fine grained quartz sandstones, siltstones and maroon shales which act as a major confining unit. (Suckla Farms SOB 2002)	Permian, **Likely Uppermost injection Zone**
L Satanka	Interbedded shale, siltstone, anhydrite, dolomite	Permian, **Unlikely injection zone**
Wolfcamp	Gray to pink limestone, dolomite, anhydrite with interbedded pink to gray or black shale and siltstone (RMAG Special Pub 2, 1976)	Permian, **Add'l injection zone, pending log interpretation**
Amazon	White to light gray tight dolomite	Permian, **Add'l injection zone, pending log interpretation**
Council Grove	White to light gray dolomite	Permian, **Add'l injection zone, pending log interpretation**
Admire	White to light gray dolomite on top, white limestone and chalk on bottom	Pennsylvanian, **Add'l injection zone, pending log interpretation**
Virgil	Limestone and thin shale	Pennsylvanian, **Add'l injection zone, pending log interpretation**
Missourian	Interbedded cream to dark brown, locally cherty and oolitic limestones and dark gray to black shales with some light gray to buff dolomite and occasional traces of tan sandstone. Increasing sandstone and red shales westward. (RMAG Special Pub 2, 1976)	Pennsylvanian, **Add'l injection zone, pending log interpretation**
Fountain	Gray (and other colors) sandstone within intervals most likely selected for injection	Pennsylvanian, rathole interval, no perforations planned

Based on available geologic and geophysical logs, the following are estimates of relevant formation depths.

Formation	Depth to Top, Ft.	Depth to Bottom Ft.	Thickness, Ft.	Comment
Alluvium	0	60	60	Subsea base = +4970'
Arapahoe	60	564	504	Subsea base = +4466'
Laramie-Fox Hills	940	1191	251	Deepest USDW Subsea base = +3839'
Pierre Shale	1200	7200	6000	Protects USDW
Lykins	8707	9307	600	Protects USDW
Lyons	9307	9443	136	Potential uppermost injection zone*
L Satanka	9443	9685	242	Unlikely injection zone
Wolfcamp	9685	9771	86	Potential future injection zone*
Amazon	9771	9829	58	Potential future injection zone*
Council Grove	9829	9981	152	Potential future injection zone*
Admire	9981	10033	52	Potential future injection zone*
Virgil	10033	10283	250	Potential future injection zone*
Missourian	10283	10381	98	Potential future injection zone*
Fountain	10381	11700	1310	100 ft. rathole interval, no perfs planned
Precambrian	11800	NA	NA	Basement rock

*pending log interpretation

Two cross sections were prepared detailing the structure of the local geology using COGCC well logs. Map 1 and Cross Section 1 show the geologic structure at the proposed ECCV well DI-1 site using the J-sand in the Dakota Group as a marker bed through Sec 1, T1S, R66W and adjoining sections. The J-Sand is a very well known oil-producing bed in the area and will be used as a guide during drilling and logging. The top of the J-sand marker for the proposed well DI-1 is estimated to be -2940 feet (below sea level or subsea) (depth of 7965 feet). The depth of the J-sand in the ECCV wells DI-2 and DI-3 will be adjusted slightly from the proposed well on Cross section 1 to account for the very slight dip in the formations.

The primary conclusions to be drawn from Cross Section 1 are: 1) the local geologic formations above the proposed injection zone are continuous and well-understood, 2) the presence of thick shales above

the injection zone significantly reduces the risk of contamination of the closest USDW interval, and 3) the formations are relatively flat and show no thickening or thinning indicating no faulting is present.

Map 2 and Cross Section 2 show the geology and structure in the lower confining zone (Lykins) and the top of the Lyons Formation (datum). This map and cross section display the locations of all OGCC well logs with total depths of 9500 feet and greater within a 15 mile radius of ECCV well DI-1. The scarcity of nearby deep wells increases the value of data from these key wells: 1) Rocky Mountain Arsenal #1 (26-2S-67W); 2) Amoco M B Lehl 1 (nearest deep well, 28-1N-65W) and 3) Suckla SWD 1 (nearest Class I disposal well, 10-1N-67W).

Based on logs from these wells, we conclude that over a 15-mile radius area: 1) the geology above the proposed well's injection formations is continuous and well-understood, 2) the geology through the Lyons formation is also continuous and well-understood, and 3) the formations show no vertical thinning, thickening or offsets indicating no significant faulting is present.

Two OGCC injection wells have been recently completed, with one in section 8, T4N, R64N (approximately 24 miles northeast of the ECCV AOR) and one in section 30, T3N, 65W (about 14 miles north of the ECCV site). Information from these wells, which penetrate and inject into the Amazon, Council Grove and Missouri Formations, was used, along with the information already presented, to estimate the injection feasibility and depths of the individual injection zones in this report. Geophysical logs are not yet available from these wells, but test data from the first referenced well showed injection rates of up to 300 gpm are possible.

Attachment G. Not Applicable

Attachment H. Operating Data

The proposed injection wells will be designed to accept injectate at rates from 150 to 400 gpm per well. We estimate the average injection rate will be about 300 gpm per well. The injection rates will be high in the summer and low in the winter in response to water demand. Injection pressure ranges are projected as follows:

	Gals/Min	Barrels/Day	Surface Injection psi
Low Injection Rate	150	5100	1000
High Injection Rate	400	13,700 9.5 bpm	2500
Average Injection Rate	300	10,275 7.1 bpm	1500

Annulus fluid will consist of fresh water treated with a standard oilfield packer fluid (oxygen scavenger and corrosion inhibitor) at 5 gal/100 bbls, approximately 0.12% by volume. A positive pressure of about 200 psi will be maintained on the annulus utilizing nitrogen gas.

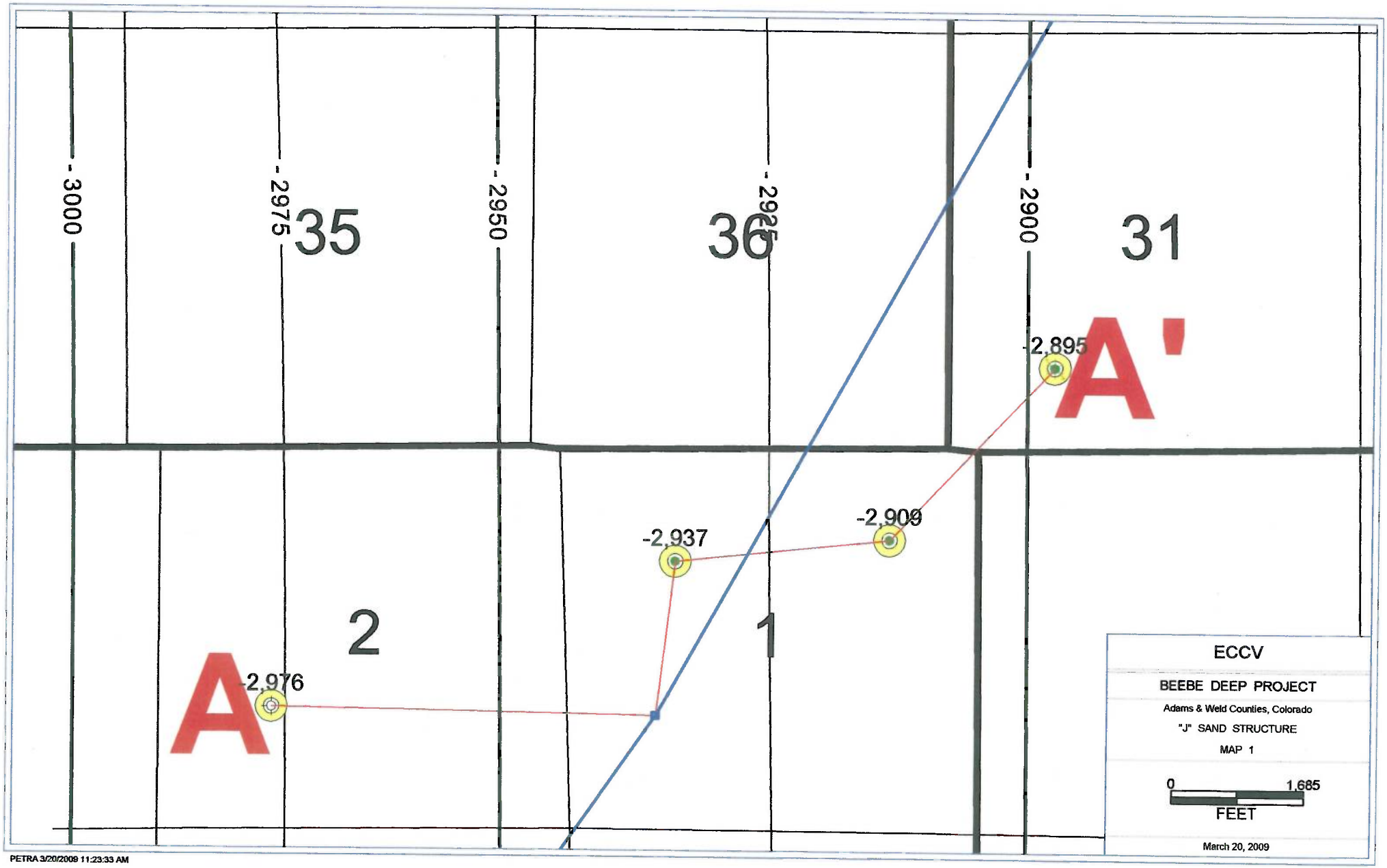
The injection fluid will be reject water generated by a reverse osmosis process on municipal-use water obtained from the on-site alluvial aquifer wells. The water treatment plant is currently being designed. As with other reverse osmosis systems, this reject water is non-hazardous per EPA guidelines for chemical, physical, radiological, biological, and corrosive characteristics.

The quality of the injectate will vary somewhat with the quality of the feed water and the degree of RO treatment. The reject water will be treated using either a "single pass" RO technique (the Low value) or using a more aggressive technique (High value). The expected ranges of reject water primary constituents are as follows:

	Low	High	Average
Density (lbs/gal.)	8.3	8.4	8.3
TDS (mg/l)	4710	23,500	14,000
pH	7.0	8.5	7.5
Nitrate (mg/l)	17	85	51
Uranium (mg/l)	150	750	450
Sulfate (mg/l)	1225	6125	3675
Fluoride (mg/l)	13.4	67	40
Chloride (mg/l)	642	3210	1930
Calcium (mg/l)	543	2720	1630
Magnesium (mg/l)	228	1140	685
Sodium (mg/l)	669	3350	2010
Corrosivity Langlier Index (mg/l)*	+2.8	-0.3	+1.2
Biologicals	None expected		

*The type of steel used in the wells will be designed based on the latest injectate quality data at the time the well is constructed to minimize corrosion. At this time, we anticipate the injectate water will likely be slightly encrustive (positive Langlier Index). The Langlier data listed above is based on limited pilot testing done by ECCV contractors. If required, chemical corrosion/encrustation inhibitors may be added to the injectate to prolong well life.

Water
$t = 32^{\circ}F$ 8.344 lb/gal
$t = 90^{\circ}F$ 8.304 lb/gal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36
31
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1
A
A'
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-2,937
-2,909
-2,895
ECCV
BEEBE DEEP PROJECT
Adams & Weld Counties, Colorado
"J" SAND STRUCTURE
MAP 1
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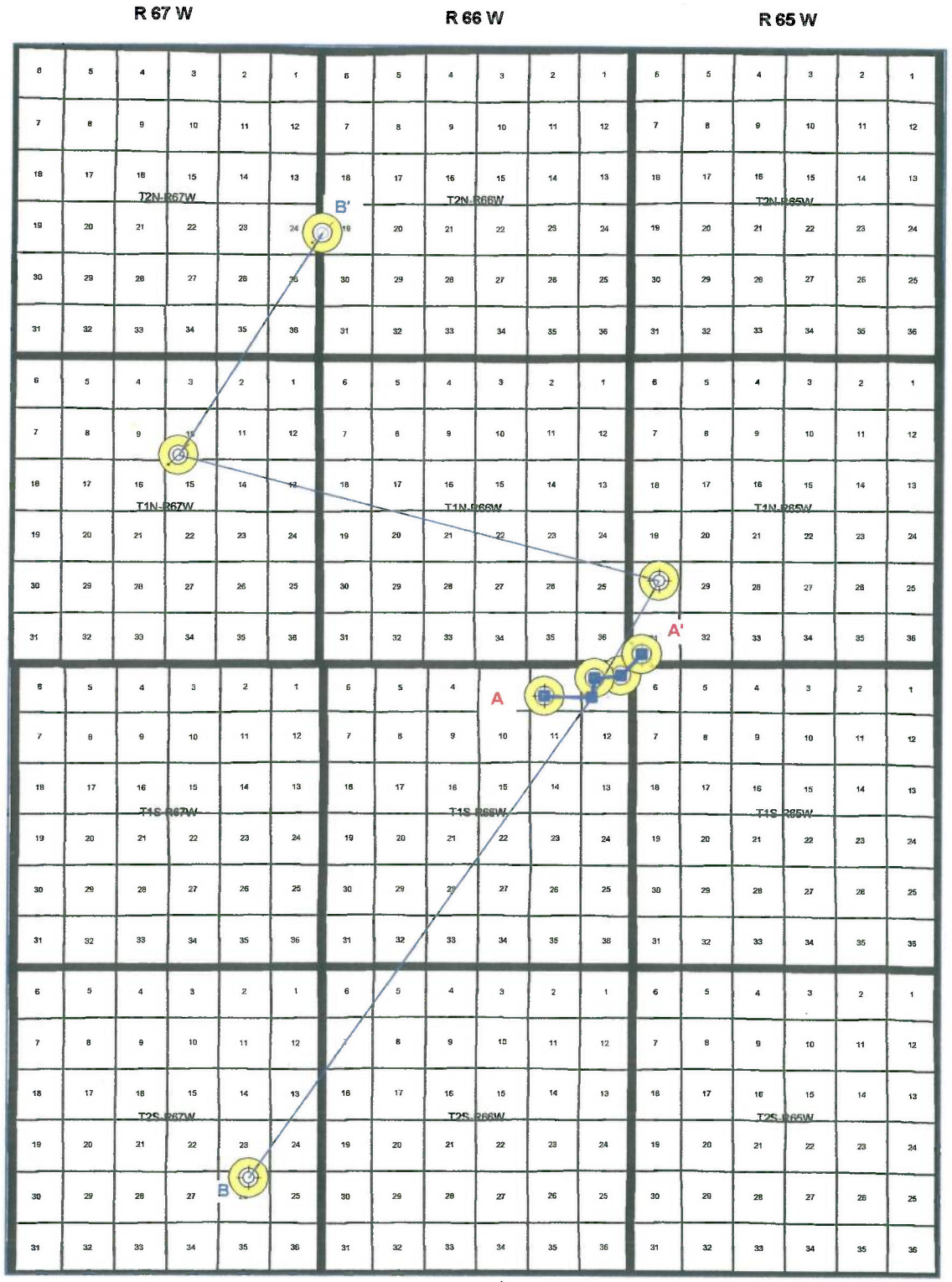
1,685
FEET
March 20, 2009
PETRA 3/20/2009 11:23:33 AM



ECCV
BEEBE DEEP PROJECT
Adams & Weld Counties, Colorado
INDEX MAP
MAP 2
0 16,651 FEET
March 20, 2009